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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/792,034	03/04/2004	Toshiyuki Miyamoto	50212-577	1384

7590 06/22/2006

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EXAMINER

DIACOU, ARI M

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/792,034	MIYAMOTO ET AL.	
	Examiner	Art Unit	
	Ari M. Diacou	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. In the remarks filed 4-6-2006 the applicant argued the following:
 - A. "Fermann's source is used as the pumping light source, not the signal source"
 - B. "Fermann is completely different" because applicant alleges that Fermann is not an optical transmission system.
 - C. "the Raman shifter 10 of Fermann is not an amplifier."
 - D. "Stolen neither discloses nor suggests a Raman gain coefficient"
 - E. "Agrawal neither discloses nor suggests a non-linear coefficient"
 - F. In the first half of page 7 of the remarks, the applicant argues that the art is not analogous.
 - G. In the first half of page 7 of the remarks, the applicant argues that the only motivation to combine the references is found in the applicants disclosure.
2. Argument A is unconvincing, the difference alleged is not claimed.
3. Argument B is unconvincing, the device is a system of elements (#9-#13) which transmit light from element 9 to element 13.
4. Argument C is unconvincing, element 10 takes light from 9 and amplifies signals 13.2 THz above those produced by 9, in a process known as Raman amplification.
5. Argument D is unconvincing, the difference alleged is not claimed.
6. Argument E is unconvincing, Agrawal does disclose a non-linear coefficient in equation 2.4.4 (β_2 and β_3).

7. Argument F is unconvincing, Fermanns device employs Raman amplification as well as plural amplifiers, and Agrawal's book is entitled "Fiber Optic Communications".

8. Argument G is unconvincing, the motivation used by the examiner was "for the advantage of higher gain". Not only is higher gain the primary focus of the optical amplifier art, it is specifically shown to be desirable by Stolen in Col 3: 33-40. Applicant is also reminded that when a reference is relied upon, it must be considered in entirety.

Claim Rejections - 35 USC § 103

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fermann (USP No. 6885683) in view of Agrawal and further in view of Stolen (USP No. 3875422). Fermann discloses an optical transmission system comprising:

- a signal light source outputting signal light with a positive chirp; [Fig. 2, #9] [Col. 7, lines 16-23]
- an optical fiber transmission line through which the signal light propagates; and [Fig. 2, #13] [Col. 7, line 63]
- a lumped Raman amplifier provided between said signal light source and said optical fiber transmission line, and Raman-amplifying the signal light outputted from said signal light source, said lumped Raman amplifier including a high-nonlinearity fiber having a negative chromatic dispersion at a wavelength of the signal light. [Fig. 2, #10] [Col. 10, lines 15-20]

- Fermann also discloses that it is advantageous to make a modular system so that desirable components may be assembled into an optimized product. [Col. 4, lines 9-22].
- Fermann also discloses that for larger compressions, one needs fibers with larger negative dispersions (more negative/farther from zero) at the signal wavelength. [Col 1, line 30 – Col 3, line 4]

but fails to disclose the numerical value of the nonlinear coefficient of the transmission fiber. Stolen teaches that fibers with larger nonlinear coefficients produce higher gains [Col. 3, lines 33-40]. Agrawal teaches how to modify fiber parameters so that one skilled in the art could choose/design a fiber with a given nonlinear coefficient [Pages 46-50]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to place a fiber with a high nonlinear coefficient and a negative dispersion at the signal frequency into the device of Fermann, for the advantage of higher gain.

10. Claims 3, 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fermann in view of Agrawal and Stolen as applied to claim 1 above. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to decrease attenuation, increase the absolute value of the negative dispersion, and increase the nonlinear coefficient as suggested by Fermann and Stolen to achieve a desired result. It is well-settled that optimizing a result effective variable is well within the expected ability of a person of ordinary skill in the subject art. In re

Art Unit: 3663

Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1955).

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fermann in view of Agrawal and Stolen as applied to claim 1 above, and further in view of Akasaka (USPAP No. 2003/0058524). The combination of Fermann, Stolen and Agrawal disclose the invention with all the limitations of claim 1, but is silent on the inherent OH⁻ transmission minima of silica fiber at ~1390 nm and necessary compensation. Akasaka teaches to compensate for this loss [¶ 0013]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to choose fiber parameters to compensate for the loss, for the advantage of cost reduction due to decreased attenuation.

Conclusion

12. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

13. The references made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.

14. The prior art which is cited but not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 3663

15. As to limitations which are considered to be inherent in a reference, note the case law of In re Ludtke, 169 U.S.P.Q. 563; In re Swinehart, 169 U.S.P.Q. 226; In re Fitzgerald, 205 U.S.P.Q. 594; In re Best et al, 195 U.S.P.Q. 430; and In re Brown, 173 U.S.P.Q. 685, 688.

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

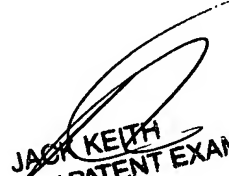
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3663

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMD 6/13/2006


JACK KEITH
SUPERVISORY PATENT EXAMINER